Error Probability Of Coded Multi-Antenna Systems In Block Fading Environments

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Summary

A union bound on the error probability of coded multi-antenna systems over block fading channels is proposed. The bound is based on uniform interleaving of the coded sequence prior to transmission over the channel. Using the uniform interleaving argument the distribution of error bits over the fading blocks is computed. The pair-wise error probability is derived for a specific distribution pattern of the error bits over the fading blocks. We consider coded systems that concatenate a binary code with a space-time block code (STBC). The tradeoff between channel diversity and channel estimation is investigated assuming pilot-aided channel estimation and the optimal channel memory is approximated analytically. Results show that the optimal channel memory increases with increasing the number of transmit antennas.